

AMENDMENT

Please amend the above-identified application as follows:

In the claims:

1. (Previously Presented) A process for the production of physically foamed injection molded articles, wherein in a first stage a propellant-free first melt portion is fed into a cavity (initial filling), in a second stage adding a physical propellant at elevated pressure to a second melt portion and injecting the second melt portion containing the propellant into the cavity (propellant injection phase), and optionally in a third stage a propellant-free third melt portion is charged into the cavity, the production of the injection molded articles occurring in the cavity,

wherein metering of the physical propellant in the second stage occurs in a pressure regulated manner, wherein the pressure which is exerted on the propellant during the propellant injection phase is greater than the pressure which is exerted on the propellant in the phases between or before or after metered addition, and the expansion of the propellant occurs in the cavity.

2. (Previously Presented) The process of Claim 1, wherein the propellant is a compressible fluid.

3. (Previously Presented) The process of Claim 1 further comprising the step of maintaining the propellant under pressure an intermediate cycle time before and after the propellant injection phase.

4. (Previously Presented) The process of Claim 3, further comprising maintaining the propellant at a pressure of at least  $p_{crit}$  at a given temperature during the intermediate cycle time.

5. (Previously Presented) The process of Claim 1, further comprising the step of controlling the pressure exerted on the propellant via a pressure control valve.
6. (Previously Presented) The process of Claim 5, wherein the pressure control valve is a multi-way valve.
7. (Previously Presented) The process of Claim 6, wherein the multi-way valve is a 3/3-way proportional valve or a 2/3-way proportional valve.
8. (Previously Presented) The process of Claim 1 further comprising the step of controlling the pressure of a critical propellant via at least one pressure relief valve connected downstream of the pressure control valve.
9. (Previously Presented) The process of Claim 8, wherein at least one of the pressure relief valves has a holding pressure equal to or higher than the pressure at which a critical propellant is held in an intermediate cycle time.
10. (Previously Presented) The process according to Claim 1 further comprising the step of regulating the pressure preset by the pressure control valve via one or more pressure relief valves to the injection pressure at which the propellant is added to the second melt portion via an injection point.
11. (Previously Presented) The process of claim 1, wherein the injection point is configured as a throttle means.

12. (Previously Presented) The process of Claim 11, wherein the injection point is in the form of a defined gap in an injector or of an injector with a sinter metal.
13. (Previously Presented) The process of Claim 11, wherein the injection point is configured as a controlled closure mechanism.
14. (Previously Presented) The process of Claim 1 further comprising the step of using water as the propellant.
15. (Previously Presented) The process of Claim 1 further comprising the step of using a gas or gas mixture as the propellant.
16. (Previously Presented) The process of Claim 15, further comprising the step of using carbon dioxide as the propellant.
17. (Previously Presented) The process of Claim 16, wherein the carbon dioxide is held in an intermediate cycle time at a pressure of at least 60 bar.
18. (Previously Presented) The process of Claim 1 further comprising the step of elevating the pressure of the propellant during the propellant injection phase to a pressure of over 60 bar using the pressure control valve.
19. (Previously Presented) The process of Claim 1 further comprising the step of generating a counterpressure in the cavity.

20. (Previously Presented) The process of Claim 1, wherein the physically foamed injection molded article is selected from the group consisting of a handle, a knob, a gearshift knob, a steering wheel casing, a ball, a sphere, a fender, a float and a closing means for bottle-like containers.

21. (Previously Presented) A device for the discontinuous metered addition of physical propellants to a foamable melt, comprising:

- a storage means, in which the propellant is stored under pressure,
- a pressure control valve for regulating the propellant pressure, and
- an injection point, which is configured as a throttle means, at which the propellant under pressure is fed to the melt,

wherein a controlled closure mechanism is provided at the injection point, and the controlled closure mechanism opens upon an increase in pressure above its holding pressure.

22. (Previously Presented) The device of Claim 21, further comprising at least one pressure relief valve.

23. (Previously Presented) The process of claim 1, further comprising the step of:  
maintaining the propellant in a compressed state in an intermediate cycle time before and after the propellant injection phase.

24. (Previously Presented) A device for the discontinuous metered addition of physical propellants to a foamable melt, comprising:

- a storage means, in which the propellant is stored under pressure,
- a pressure control valve for regulating the propellant pressure, and
- an injection point, which is configured as a throttle means, at which the propellant under pressure is fed to the melt,

wherein at least one pressure relief valve is provided before the injection point, and the pressure relief valve opens upon pressure increase above its holding pressure.

Please add the following new claim:

--25. (NEW) A device for the discontinuous metered addition of physical propellants to a foamable melt as set forth in claim 1, comprising:

- a storage means, in which the propellant is stored under pressure,
- a pressure control valve for regulating the propellant pressure, and
- an injection point, which is configured as a throttle means, at which the propellant under pressure is fed to the melt,

wherein a controlled closure mechanism is provided at the injection point, and the controlled closure mechanism opens upon an increase in pressure above its holding pressure.--